

Product Performance Review
By
Kevin J. Sweeney, Senior Entomologist

Kevin J. Sweeney
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DP: 338503

PM: George LaRocca, PM 13

EPA Reg. No. 499-473

Product Name: TC 205 Injection System Insecticide

Active ingredients: 0.05% lambda-cyhalothrin

Formulation: RTU pressurized spray

Use pattern/sites: for spot, crack and crevice, and surface treatments indoors; crack and crevice use only in food handling/preparation areas; as an aerosol fog in cabins, aircraft cargo areas, and many indoor and outdoor areas.

Request: review addition of bedbugs and treatment of areas infested with bed bugs. Review two bed bug studies. One evaluated "contact kill" and the other "residual kill" in the laboratory. The labeling has a "kills" claim.

OPPTS Guideline: 810.3500

Study GLP?: These were non-GLP studies but some corrections were included to the report.

MRID 47064602 Laboratory bioassay to determine the efficacy of residual deposits of TC-241 against the bed bug (*Cimex lectularis*).

MRID 47064601 Laboratory bioassay to determine the efficacy of a directed spray of TC-241 for the control of bed bugs (*Cimex lectularis*).

REVIEWS OF THE SUBMITTED STUDIES:

The test product was TC-241, a 0.05% lambda-cyhalothrin product, which claims to be similar to the subject product. Testing with the subject product was not provided.

MRID 47064601 Direct Spray Testing

Purpose: To determine the efficacy of a direct contact spray treatment against bed bugs.

Method: The test protocol was not standard. Five untreated control and five treatment replicates, each consisting of 10 bed bugs-mixed sex, were tested. The tested bed bugs consisted of a mixed sex and life-stage population. Bed bugs were blood-fed two days before treatment. Each treatment replicate was sprayed with the subject product for one-second. Knockdown was assessed at 30 sec, and 1,2,3,5,10,and 15 minutes post-treatment. Mortality was assessed at 24 hours post-treatment.

Results: Control mortality equaled zero. In the treatments, 100% of the test insects were knocked down at 30 second post-treatment. 100% were knocked down at one minute and stayed down. Mortality in all treatments equaled 100%. However, the table only reports what appears to be one test. The TC-241 treatment # should read "50" and not "10". If only replicate was conducted for each treatment, the methods should be amended to reflect this protocol.

Conclusion: This study supports a "Kills Bed Bugs" claim on the label. However, the registrant should correct the study and report the values correctly.

MRID 47064602 Residual Testing

Purpose: To determine the residual control of TC-241 treatment on wood panels.

Method: Only vinyl tiles were treated with the subject product by spraying a 0.1 square meter tile for one second. Assessments were made with "non-aged" tiles and tiles aged for 1,2,4,6,8, and 12 weeks. All tiles were air dried for 24 hours post-treatment. Aging occurred at room temperature. For each set of aged tiles, five treatment replicates and seven control replicates were tested. Each replicate consisted of mixed sex and life-stage bed bugs. Bed bug knockdown and mortality were evaluated at 5, 15, 30, minutes and at 1,2,4,6,and 24 hours post-exposure. Mortality is also reported in table and graphical form. GLM ANOVA testing was done but results were confusing given the raw data presented. Note: EPA is concerned with mortality not moribund values for assessing efficacy. Knockdown is not reported due to variability in results over time. The number of control and treated replicates were very uneven at each time interval.

Results: The results indicate that the residual treatment made to vinyl tile is effective up to 12 weeks post-treatment. Most replicates results in significant effects against bed bugs at 4 hours exposure to the residue in each weekly exposure to residual treatment.

Conclusion: The treatments to vinyl tile were effective but do not "stand-alone" to support a residual claim of 12 weeks. Before EPA approves a residual claim, Whitmire must submit testing on unpainted wood panels. The claim should not be granted on a conditional basis. EPA recommends a large panel be used because the panel size Whitmire is using is too small for the exposure of 10 bed bugs.

Entomologist's Recommendations:

1. The submitted studies support a "Kills Bed Bugs" claim.
2. The directions for applying the product to kill bed bugs are acceptable except that the reviewer should determine if mattress and bedding treatments are acceptable for lambda-cyhalothrin uses. If not, the product should only be applied to the bed frame and the other sites indicated in the bedroom. A re-treatment interval should be stated.